

REMARKS/ARGUMENTS

In the Office Action mailed December 13, 2007, claims 1-15 were rejected. Additionally, claims 1-15 were objected to. In response, Applicants hereby request reconsideration of the application in view of the below-provided remarks. No claims are added or canceled.

For reference, claims 1-15 are amended. In particular, claims 14 and 15 are amended to clarify the reference to a memory element. The amendments of claims 14 and 15 are supported, for example, by the subject matter described in the specification at page 9, lines 11-18, and claim 15. Additionally, claims 1-15 are amended to remove several reference numbers and parentheses as requested by the Office Action.

Objections to the Drawings

The current application is a U.S. National Stage application. The labeling of figures with text matter is prohibited under PCT Rule 11.11, except when absolutely indispensable for understanding. Further, MPEP 1893.03(f) states that “[t]he USPTO may not impose requirements beyond those imposed by the Patent Cooperation Treaty (e.g., PCT Rule 11).” In the present application, Applicants submit that the addition of text labels to the drawings is not “absolutely indispensable” because the individual drawing elements are identified and described in the specification. In view of the above rules and the description available in the specification, Applicants respectfully assert that additional text labeling is not required in the drawings of the current application.

Additionally, the Office Action states that Figure 5 should include a reference character in relation to the disclosed “frame gap 84.” Applicants submit that the specification is amended to remove the references to the “frame gap 84.” Accordingly, Applicants respectfully request that the objection to Figure 5 be withdrawn.

Objections to the Claims

The Office Action also suggests that the bracketed information in claims 1-15 be removed. Although the claims do not include brackets per se (i.e., “[” and “]”), claims 1-15 are amended so as to remove parenthetical information inasmuch as the parenthetical

information does not pertain to mathematical equations and/or representations. Where parenthetical information is representative of mathematical equations and/or representations, Applicants submit that the parenthetical information is understood within the context of the claim. Accordingly, Applicants respectfully request that the objections to claims 1-15 be withdrawn.

Objections to the Specification

The Office Action also suggests that references in the specification to the claims be removed. Applicants submit that, the specification is amended to remove references to the claims in the summary and detailed description. Accordingly, Applicants respectfully request that the objection to the specification be withdrawn.

Claim Rejections under 35 U.S.C. 101

Claims 14 was rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. Applicants submit that claim 14 is amended to recite statutory material. In particular, claim 14 recites a memory element. This amendment is supported by the specification (e.g., see page 9, lines 11-18). Accordingly, Applicants respectfully request that the rejection of claim 14 under 35 U.S.C. 101 be withdrawn.

Claim Rejections under 35 U.S.C. 112, second paragraph

Claims 1-15 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In particular, claims 1-15 were rejected for not being operatively linked to perform all the operations described. Applicants respectfully note that claims 1-15 particularly point out and distinctly claim a method and system for temporal clock synchronization. In particular, claims 1-15 particularly point out a process to synchronize the time of one or more clocks, including: (A) acquiring state values; (B) filing the acquired state value at a corresponding position in a first list, L, comprising (k+1) positions, if the acquired state value is smaller than the (k+1) smallest element or is smaller than or equal to the (k+1) smallest element of the list, L, and where k is a predefinable error tolerance and filing the acquired state value at a corresponding

position in a second list, H, comprising (k+1) positions, if the acquired state value is greater than the (k+1) greatest element or is greater than or equal to the (k+1) greatest element of the list, H; (C) computing a mean value, M, from the (k+1) smallest element of the first list, L, and the (k+1) greatest element of the second list, H, if $n \geq (2k+2)$, where n is the number of acquired state values; (D) determining a correction value, K, as a function of the mean value, M; and (E) correcting the clocks that are to be synchronized such that a current state value of this clock takes the correction value into account. Each operation of the process builds upon the previous operation as explained in further detail in the specification and hence, the operations are interconnected. Likewise, claims 10-15 particularly point out and distinctly claim a system and/or a computer program to perform the process described above. Therefore, Applicants respectfully submit the methods and systems of claims 1-15 particularly point out and distinctly claim methods and systems for temporal synchronization of a clock or, in other words, the synchronization of the time of a clock. Accordingly, Applicants respectfully request that the rejection of claims 1-15 under 35 U.S.C. 112, second paragraph be withdrawn.

Claim Rejections under 35 U.S.C. 102

Claims 1-15 were rejected under 35 U.S.C. 102(b) as being anticipated by Berthaud (U.S. Pat. No. 6,157,957, hereinafter Berthaud). However, Applicants respectfully submit that these claims are patentable over Berthaud for the reasons provided below.

Independent Claims 1, 10, and 12

Claim 1, recites “at least for the nodes that are to be synchronized: acquiring state values which are dependent on a time base of the nodes” (emphasis added). Claims 10 and 12 recite similar limitations.

In contrast, Berthaud does not disclose acquiring state values which are dependent on a time base of nodes that are to be synchronized. Berthaud merely discloses a master node updating one single slave node at a time. Berthaud, col. 4, lines 36-45 (“...the invention implies communication only between one given slave and its master” (emphasis added)). With reference to Fig. 2 (II) of Berthaud, the node clock

synchronization of Berthaud is different from acquiring state values from multiple nodes at a time, or “nodes that are to be synchronized,” because Berthaud updates nodes A, B, C, D (Berthaud, Fig. 2 (II)) in four separate operations. In other words, Berthaud does not acquire state values from nodes A, B, C, and D at once, but rather, one node and operation at a time. Berthaud performs a separate operation for A, and performs another separate operation for B, and so on. Performing one operation to acquire state values for multiple nodes and for performing synchronization for the multiple nodes may save processing time compared to acquiring state values from each node individually and performing synchronization for each node in separate operations. Thus, Berthaud does not disclose acquiring state values which are dependent on a time base of the nodes that are to be synchronized.

Additionally, claim 1, recites “for all acquired state values: filing the acquired state value at a corresponding position in a first list, L, comprising (k+1) positions, if the acquired state value is smaller than the (k+1) smallest element or is smaller than or equal to the (k+1) smallest element of the list, L, and where k is a predefinable error tolerance” (emphasis added). Claim 1 recites similar limitations for a second list H, as well.

In contrast, Berthaud does not disclose filing state values in a first list comprising (k+1) positions and a second list comprising (k+1) positions according to the value of the acquired state value, where k is a predefinable error tolerance. Berthaud merely discloses a history that includes entries of a “triplet” of information, namely, a master node time value, a slave node time value, and a computed uncertainty value. This “triplet” of information is stored according to a polling instance, k . The history list of Berthaud, therefore, contains merely multiple versions of the same “triplet” information. Berthaud, col. 5, lines 26-67, col. 7, line 19, to col. 8, line 20 (“...the ‘necessary data’ consists for the slave in getting at each polling a master time $t_M(t)$ value corresponding to a slave time $t_S(t)$ value (with respect to absolute time t) as well as having an accurate uncertainty value (Δ) on master time $t_M(t)$ value”).

Storing three values (a slave time, a master time, and uncertainty value) in a history that lists those same three values according to a polling instance, k , is not the same as filing state values in two separate lists based on the values contained in the state values.

Moreover, Berthaud appears to be silent with regard to a predefinable error tolerance, k . The polling instance, k , of Berthaud is different from the predefinable error tolerance, k , because a polling instance is by nature a varying number that describes how many synchronization polling instances have occurred, and is not a predefined constant for a given instance of a synchronization operation.

Also, Berthaud appears to be silent with regard to filing $(k+1)$ state values in a first list and storing $(k+1)$ state values in a second list according to the predefinable error tolerance, k . Therefore, Berthaud does not disclose filing state values in a first list comprising $(k+1)$ positions and a second list comprising $(k+1)$ positions according to the value of the acquired state value, where k is a predefinable error tolerance.

Additionally, claim 1, recites “computing a mean value, M , from the $(k+1)$ smallest element of the first list, L , and the $(k+1)$ greatest element of the second list, H ” (emphasis added).

In contrast, Berthaud does not disclose computing a mean value from the $(k+1)$ smallest element of the first list and the $(k+1)$ greatest element of the second list. Berthaud merely discloses computing an inferior convex closure and a superior convex closure which appear to be limiting vectors (Berthaud, col. 7, line 19, to col. 8, line 20; Fig. 6.). Computing limiting vectors from the “triplet” information of Berthaud (Berthaud, col. 5, lines 49-65, Fig. 3) is different from computing a mean value from the smallest element of the first list and the greatest element from the second list, because vectors are merely a line with a direction, and not a mathematical formula such as the computation of a mean value. In fact, Berthaud appears to be silent with regard to computing a mean value. Therefore, Berthaud does not disclose computing a mean value from the $(k+1)$ smallest element of the first list and the $(k+1)$ greatest element of the second list. Since Berthaud does not disclose at least the aforementioned limitations of claim 1, Applicants respectfully assert claim 1 is not anticipated by Berthaud. Accordingly, Applicants respectfully request that the rejections of claims 1, 10, and 12 under 35 U.S.C. 102 be withdrawn.

Dependent Claims 2-9, 11, and 13-15

Claims 2-9, 11, and 13-15 depend from and incorporate all of the limitations of independent claim 1. Applicants respectfully assert claims 2-9, 11, and 13-15 are allowable based on an allowable base claim. Additionally, each of claims 2-9, 11, and 13-15 may be allowable for further reasons.

CONCLUSION

Applicants respectfully request reconsideration of the claims in view of the amendments and remarks made herein. A notice of allowance is earnestly solicited.

At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account **50-3444** pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees to Deposit Account **50-3444** under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Respectfully submitted,

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Date: March 13, 2008

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